

monia; generally constipation; very vitiated alvine discharges; urine dark and generally thick; vomiting seldom; intellect not so confused as in typhoid fever, nor the deafness of that disease; extremities inclining to be cold; sleeplessness and wakeful sensibility to suffering; no inclination for food, and not much craving for drink; tongue dry and coated, but not swollen, neither was it observed to be smooth or glossy; eruptions sometimes at the commencement, but always more or less before complete recovery. Convalescence slow; much emaciation; nervous system continued long weak; no permanent or unfavourable sequelæ were observed.

The treatment pursued was the early abstraction of blood generally or locally, according to circumstances, to relieve the brain and spine. Stimulating frictions to the whole spinal column and extremities. Warmth to the feet, with sinapisms to different parts to cause counter-irritation. Blisters sometimes, but seldom necessary. Stimulants. Diaphoretics when feverish. The liver and bowels steadily acted on by mercurial purgatives at night, and castor oil next morning, and as soon as the violence of the symptoms abated, quinia freely administered to the amount of eight or ten grains per day for the first three or four days; this, however, to be varied according to circumstances. The nourishments chiefly beef-tea or essence, barley gruel, sago, and such articles of a similar kind as best suited the desire or inclination of the patient.

Of necessity the treatment required to be varied according to the state of the case, but the foregoing embraces the general points of treatment pursued by me in the management of this disease, which seemed, so far as my observation enabled me to judge *a cerebro-spinal congestive fever*.

FRANKFORD, September 11, 1864.

ART. VII.—*Cerebro-Spinal Meningitis as it occurred in Licking County, Ohio.* By J. R. BLACK, M.D., Newark, Ohio.

In common with other sections of country, a severe, unusual, and fatal form of disease has had a limited prevalence in the county of Licking. Some of the cases that came under my care seemed anomalous and instructive, and may serve to indicate a clew to the precise nature of the inflammation that has, apparently, been little influenced by treatment, and found so destructive to life by its action upon the nervous centres. There seems to be a relation, if not identity, between what is known as cerebro-spinal meningitis, and spotted fever. In fact, reliable observers regard the latter as only a more severe grade of the former, in which there is a more intensified and destructive metamorphosis of the blood. Dr. Dunbar, of

Cambridge, Ohio, where spotted fever prevailed eighteen months ago to an alarming degree, informs me that the invasion of the nervous centres was invariable, while the disease in some ran its career without any petechiæ being manifest upon the surface, while in others they were only observed after death. From this it would appear that the nervous involvement is more pathognomonic than the blood extravasation, and that the latter may be regarded, only, as ocular evidence of blood degeneration from the presence of a zymotic agent whose chief, and perhaps primary, force is spent upon the cerebro-spinal axis. That this affection differs from ordinary traumatic and sthenic inflammation of the nervous centres, I entertain not the slightest doubt. The early and free perspirations, the marked blood derangement, the results of treatment, the rapidity of *post-mortem* decomposition, the generalizations of clinical observation, all conspire in fixing this idea upon the mind. It is quite possible that other observers may not have seen as peculiar a series of morbid phenomena appertaining to this disease as the writer, and therefore may not agree with his conclusions; but for the purposes of comparison of enlarged and true generalizations clinical facts from every source are obviously essential, provided only, that they are accurately noted and correctly interpreted. More and more does the true physician feel this need. From what has been seen, the mind often begins to feel at rest in regard to the nature and treatment of a disease until a new series of phenomena completely upset his faith, or shed a flood of light on what was before uncertain and obscure.

Before relating the cases deemed specially instructive, I may remark that cerebro-spinal meningitis prevailed, to some extent, in the regiment to which I was attached (*viz.*, 113th Ohio V. I.), in the year 1862. While embarking on a steamer at Lonisville, Ky., in the month of February, the first example occurred. The symptoms were rapid and violent—death taking place in about fifty hours. Ordinary antiphlogistic treatment, for what appeared to be a phlogistic disease, did not seem to exercise the slightest curative influence. Some twelve or fifteen instances in all came under my care, not one of whom were saved, although some of them were the athletes of the regiment. Among the last treated, I resorted to large doses of aconite as a nervous sedative; but it, like preceding agents, seemed wholly inoperative. The leading symptoms of these cases were: a small, and not usually rapid pulse; sordid tongue, coma, and opisthotonos. From other surgeons of the Army of the Cumberland I learnt that like examples had come under their care, and with like results.

CASE I. Nov. 30, 1863. Called to see Mr. Duckworth, æt. 46, farmer, of good constitution; habits somewhat intemperate. Had been taken with a severe chill on the 27th, of considerable duration, succeeded by a high fever, and well-marked delirium. Remittent chills of a slighter grade had followed, with fever and free perspiration. Cathartics had been given, with diaphoretic teas.

Expression calm, face flushed, skin moist; had been in a free perspiration all night; tongue moist and nearly clean; intense thirst; mind rational; pulse 142. Complains of soreness throughout whole body, as if he had been beaten, with darting pains along the extremities. Sees spectra; and wife says that through the night there is aberration of the thoughts every now and then, although otherwise perfectly quiet. As bowels had been well opened, and the true nature of the case in doubt, he was put upon an expectant plan—that of small doses of ipecac and chlorate potassa.

Dec. 1. No improvement. Complains of being chilled on least exposure of the body. Did not sleep, nor indeed had since date of illness. Morphia added to prescription.

2d. Still no better. Morphia procured some short slumbers. Not the least desire for food, but thirst continues. The perspiration of past night very profuse, wetting through nearly all of the bedding. There is great soreness, amounting to tenderness over the limbs; and on the inside of left knee, a little above the joint, a diffuse intumescence has made its appearance, with a faint blush of red upon its surface. There is a similar, though smaller intumescence also upon the forearm, just above the wrist-joint, on the right side. The pain on these spots is almost intolerable, and the slightest pressure or motion of them cannot be borne. As bowels were torpid, a cathartic of Rochelle salts was ordered, followed by morphia, quinia, and iodide potash. Camphorated oil to the local disease.

3d. Perspiration continues nearly all the time. Pulse lower and more feeble; had some rest during night; appears quieter, and less disposed to talk; skin moist and slightly cool; eats nothing. The swelling on each limb is gaining in size and extent. Treatment continued.

4th. Head drawn back; does not seem rational; talks in whispers; pulse almost imperceptible at the wrist; evidently sinking rapidly. The intumescence gradually increasing, and the enlarged veins can be readily traced upon its surface. Died at 12 M.

CASE II. Two nights prior to the death of this patient was called in consultation with Dr. Vail to see a neighbour of the first, who was said to be similarly affected. He was taken ill on the same day, in much the same manner, and, to my surprise, presented almost identical symptoms. Like Mr. D., the intumescence was symmetrical, though on opposite limbs. Had the same pain and extreme sensitiveness, and presented the same external appearance. The main difference lay in the more marked delirium, and the greater extent of the swelling which extended from the knee to the foot. The treatment had been alterative and rigidly antiphlogistic. He was evidently dying; and expired in about eight hours, to the surprise of all his friends.

CASE III. Was called, Jan. 28, 1864, in consultation with Dr. Cutting, of Hebron, to see Mrs. B., æt. 68, widow, of excellent constitution, and mother of six children. Had been seized with a chill and fever, with intense aching in the whole body; darting pains through the limbs, but more especially on the inside of right knee-joint, and just above the wrist on left arm. A gradual enlargement of these places soon became apparent, and at time of my first visit (third day of illness) were each about the size of the open hand. They were slightly red, extremely tender, and gave agonizing pain on the slightest motion. Mind confused, but rational; had had no rest, except from opiates; and had been freely purged with calomel

and jalap. No appetite; pulse 98; skin slightly dry, though often moist; tongue slightly coated, but not dry; thirst intense; urine natural. Tr. ferri murias, with sulph. ciuchonia, was agreed upon as to treatment, with tepid lotion to the affected parts, containing some laudanum. Under this treatment the disease slowly abated, and it was gratifying to observe that the tumefaction did not increase after a few hours' use of the above lotion. But this may open to the *post hoc ergo propter hoc* mode of reasoning.

CASE IV. Mrs. B., æt. 31, mother of five children, and in fourth month of sixth pregnancy, of good constitution, was taken with a prolonged chill, severe aching over whole body, and parturient pains. On afternoon of same day had second chill, not so severe as first, succeeded by very high fever and an increase of pain. During the night she aborted. The fœtus appeared natural, the secundines passing without difficulty, or hemorrhage. On the next day an intolerable aching pain in left shoulder-joint, with a growing enlargement, made their appearance. It was deeply located, and slight relief was afforded by constant friction over its surface. Soon, either from this or the stimulating anodyne applications, a tenderness and blush of redness were produced upon the skin. The enlargement steadily grew, and powerful anodynes, locally and generally, gave only partial relief to the intense suffering. On second night it was so aggravated that Drs. Wilson and Ballou were sent for in consultation. Large doses of morphia, and water with some spts. camphor locally, served to lull its violence. Ipecac and calomel were also regularly administered. By the fifth day, or second of this treatment, the violence of the disease was masked, but otherwise no change for the better could be detected. On the contrary, the intumescence gradually spread along the deltoid, and extended over the scapula. The thirst intense; tongue dry, lightly furred; skin rather hot and dry, though easily excited to diaphoresis—which was not the case in health. Secretion of kidneys remarkably free; lochia seemingly natural; no tenderness over the abdomen. Could not bear the slightest pressure over the shoulder, and the least motion gave the greatest agony. Pulse 120. On the sixth night began to complain of the head, desiring to have it constantly pressed. The fitful sleep was broken, she became more restless, and by day turned over for the first time and lay upon the affected member. On examination of the shoulder the swelling, heat, and pain had each measurably subsided. In short, metastasis to the brain was the appalling result. The intellect was more clouded; but, by an effort, rational answers could be obtained. The head, in about twenty hours more, became retracted, she frequently put her hand to the nape, and complained as much of her back as head. Restlessness became extreme; putting out her arms, to be turned every five minutes, which had to be done with the greatest care, for the least twisting of the spinal column made her scream with agony. Light and sound gave great uneasiness. Sordes began to form on the teeth, the tongue got drier, and the pulse came down to 98. Blister to the nape, sinapisms to the feet, tepid water to the head, and internally same medicines as above. On the eighth day the symptoms more aggravated; the retraction of the head painful to see; deglutition difficult; very restless, except when under influence of heavy opiates. Mind more clouded and almost unconscious. Urinary excretion yet free. That night Dr. Hildreth, of Zanesville, in consultation. Found the lately affected shoulder emphysematous, with purulent indications; though, on exploration, none was found. Perman-ganate potassa, gr. ss every 3 hours, with extension of blister along the

spinal column. But deglutition was so difficult that only two doses could be administered. Coma became more profound, the struggle of vital force became more and more feeble, till, on the morning of tenth day, she breathed her last.

The two following cases were seen in consultation with Dr. Ewing, of Hebron:—

CASE V. Isaac B., æt. about 46, farmer, good constitution, regular habits; had been sick some five weeks with lobular pneumonia; after which a tedious convalescence set in, followed by sciatica and a low, constant fever. At this juncture (time of my visit) there was transient delirium, dry tongue, pulse 115, and intense pain along the course of sciatic nerve. The patient was much emaciated and prostrated. Indications to relieve pain and sustain strength. R. Tr. ferri murias, and cinchonia sulphas. Locally, powerful anodyne liniment. On second visit, two days after, found that the pain gradually shifted upwards, till apparently the whole spinal column was invaded. The head became retracted, and patient, when rational, referred all his misery to the nape. Delirium rapidly increased, succeeded by profound coma, under which the patient sank.

CASE VI. S. K., æt. 9. Healthy interesting boy, came home from school, seized with a chill, followed by fever. This partially subsided, when he was taken with the second on same day. From that time fever, delirium, and distressing retraction of the head continued for a number of days. The treatment had been, after evacuants: cold water to the head, blister along caput coli, sulph. quinia internally. Ten days from its onset. (the time of my visit) there was but little fever or excitement; patient lay quiet; eyes wide open; pupils normal and equal; and entirely deaf. A few days after he became more restless, and died apparently from cerebral softening.

I pass over several like cases to one I saw in consultation with Dr. Milick.

CASE VII. R. O., æt. 11, a girl of fair health and moderate constitutional stamina. Had been seized, three days prior, with a chill, followed by fever, great restlessness, rapid pulse, and pain chiefly along the vertebral column and extending to the medulla oblongata. On the fourth day she was perfectly rational, yet restless; tongue moist; pulse 116, small and rather corded. Skin slightly dry, though easily excited to perspire. Face flushed, now and then; at which time irregular-shaped spots of blood hue, not raised, would appear upon the forehead and chin. She was paralyzed in upper and lower extremities. The respiration was somewhat laboured. Thirst very craving; complete anorexia, and insomnia. Had been blistered along the spinal column, purged, and taken calomel and ipecac with regularity. Infusion eupatorium perfoliatum, with permanganate potassa, and as soon as skin and pulse softens, quinia, with tr. ferri murias. On next day, although general symptoms looked more favourable, and she could even slightly command the use of the fingers, yet deglutition gave evidence of impairment, and the respiration was much more difficult. These leading functions became more and more difficult; the head, from the first slightly retracted, became more so, till thirty hours closed the scene.

Remarks.—In the diagnosis, etiology, and treatment of these cases, more

especially of the first two, peculiar difficulties and embarrassments arose. The extent and degree of the local manifestations did not seem at all alarming, and yet there were unusual symptoms, and a gravity about general appearances that was perplexing. The physician in attendance on the twin case was even less prepared than myself for the untoward result. Two hearty, hale farmers, about the same age, neighbours, are taken sick on same day, in same way—each one of whom had a swelling on an arm, and leg, precisely alike—both dying within a week, and within forty hours of each other. Erysipelas, rheumatism, abscess, bone erysipelas, and poison—all had their advocates, public and professional.

Taken in some aspects, for example, that of intumescence, severe pain, intolerance of motion, and profuse perspirations it would seem to indicate rheumatism. But on sifting the cases it will be seen that there were symptoms, absent and present, that do not belong to this affection, and the sequel gives results more serious than the history of the disease will warrant. The inflammation was not confined to, nor did it manifest affinities for the fibrous or aponeurotic tissues, but seemed to engulf all the textures in which it was located. Also the constitutional disturbance seemed wholly disproportionate to the extent of local disease, and its rapidity and fatality were unprecedented. The extent and degree of the tumefaction, with the erythematic blush on the surface, might lead to the diagnosis of erysipelas; which, by the way, the majority of physicians who saw the cases, seemed to concur in. The intense lancinating pains, the great intolerance of motion, the profuse perspirations from the inception of the disease, the slight grade of inflammation upon the integuments, as well as the absence of vesication, all tended to disprove that idea.

It may be thought that there is but slight evidence to class the two first cases as instances of cerebro-spinal meningitis. Taken alone, this may be true; but even in this view the mode of death was strikingly suggestive. The delirium, coma, and head retraction were the most prominent symptoms during the last hours of life. The nervous centres appeared to be overwhelmed by the phlogistic poison, arresting innervation, and causing death with unexpected rapidity. In Case I., I shall never forget the dread change wrought by half a dozen of hours. From conscious semi-delirium, a good, regular pulse, easy respiration, and moist skin, the patient rapidly fell into deep coma, stertorous breathing, feeble pulse, cold clammy perspiration, most marked retraction of the head, and a dirty, purple-faced visage. That there was metastasis of the disease to the brain did not seem to admit of a doubt, which, if there was, Cases IV. and V. would serve to dissipate. In Case IV., although nervous disturbance was well marked, yet it cannot with propriety be regarded as an instance of cerebro-spinal meningitis. It is inserted as an example of disease in an unusual form, and a phlogosis having special affinity for the nervous centres. Indeed, to my mind it is the external manifestations suffering translation, and producing the well

known symptoms of that disease which gives these cases any special value. That this tegumentary inflammation, and that which has of late throughout the country given rise to the collocation of signs and symptoms, known under the name of cerebro-spinal meningitis, are one and the same, it seems to me, is fully borne out by the above instances. Allowing this to be correct, the cases are of value as indications to the treatment. No one could examine them attentively without being struck with the resemblance to rheumatism, as well as to erysipelas. A *materies morbi*, virulent and potent, has here located, and lighted an angry flame of vital resistance. Is this to be antagonized, or eliminated by what is termed antiphlogistic remedies? Practice has demonstrated their utter futility. Antiseptics, eliminators, and tonics are the obvious means of counteracting the destructive effects of intra-organic poisons. Subsidiary means are, of course, not to be neglected: such as moderating excessive action in individual parts, and attention to function partially or wholly arrested. An important fact, having an obvious influence upon treatment, is the rapidity with which *post-mortem* putrefaction ensued in all of the fatal cases. This destructive septicity, often shadowed forth in *ante-mortem* cases, did not escape the practised eye of Dr. C. C. Hildreth, in Case IV. He could not rationally attribute the extraordinary manifestations of that case to other causes than that of pyemia.

ART. VIII.—*Description of a New Bone-Drill.* By B. HOWARD, M.D.,
late U. S. Army. (With Eight Woodcuts.)

BEING unable to find a bone-drill in the market, or one anywhere described, which would answer my purpose, I had one made by Messrs. Tie-mann & Co. for field use, which combines these advantages: It is very simple; unlikely to get out of order by rusting or otherwise, and is easily cleaned. It has no projecting points to become entangled in the tissues, and works finely and rapidly at any angle with the surface of the bone drilled.

In the accompanying figures, A represents the stock, consisting of—1, handle, made of hard rubber or wood; 2, metal female socket, into which the axle of the wheel is inserted, and permanently fastened so as to allow only of a revolving motion. This is produced by applying the string of the bow, Fig. B, to the wheel, which revolves the shaft from 2 to 3. At Fig. 3 is a socket into which the various drills are received.

Fig. B is an ordinary steel bow, attached to a wooden handle through a hole in which the catgut string, fastened to a loop at the end of the bow, is passed and secured by a knot at the back of the handle. The entire